

REMARKS

This amendment responds to the office action mailed May 8, 2007. In the office action the Examiner:

- rejected claims 21-24 and 26-34 under 35 U.S.C 103(a) as being unpatentable over Kumar et al. (U.S. Pub. 2002/0167011)
- allowed claims 15-20; and
- objected to claim 25 as being dependent upon a rejected base claim.

After entry of this amendment, the pending claims are: claims 15-34.

Claim Rejections

Claim 21

In the office action dated May 8, 2007, the Examiner acknowledged that the applicant's arguments filed on March 7, 2007 are persuasive. In particular, the Examiner agreed with the applicant that Kumar does not teach a semiconductor fabrication method that has the same sequence of processing steps as recited in claim 21.

Nonetheless, the Examiner contended that

it would have been obvious to one of ordinary skill in the art to form the buffer region and the second gate region after forming the first gate region because selection of any order of performing process steps is prima facie obvious *in the absence of new or unexpected results*. In re Burhans, 154 F.2d 690, 69 USPQ 330 (CCPA 1946) [emphasis added]

The applicant respectfully disagrees and traverses because the Examiner has misinterpreted In re Burhans by ignoring the fact that a processing order different from Kumar's would produce new or even unexpected results.

According to Section 2143.01 of MPEP,

If proposed modification would render the prior art invention being modified *unsatisfactory for its intended purpose*, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984) [emphasis added]

Stated differently, the Examiner has the burden to demonstrate that one skilled in the art can use the processing order recited in claim 21 to produce a device substantially similar to Kumar to show that claim 21 is obvious in light of Kumar.

FIG. 26 of Kumar depicts a cross-sectional view of a silicon carbide semiconductor device. The device includes a first gate area 3 extending laterally within the n- drift area 2, a

horizontal field enhanced area 5 above the first gate area, and a U-shape third gate area 8 formed on the sidewall and the bottom of the trench 30 that is above the field enhanced area 5. In addition, there are other components at or near the top of the substrate, including a pair of second gate regions 6 and a pair of source regions 7.

To practice claim 21, the third gate area 8 (which the Examiner equates to the first gate region of claim 21) has to be formed before the implantation of the first gate area 3 (which the Examiner equates to the second gate region) and the field enhanced area 5 (which the Examiner equates to the buffer region). But after the formation of the third gate area 8, it would be impossible to implant the first gate area 3 and the field enhanced area 5 having the profiles shown in FIG. 26. The third gate area 8 would inevitably block and disrupt the implantation steps of forming the two areas 3 and 5 beneath the area 8. For example, the area 3 would have a shape similar to the trench, which would disrupt the function of the field enhanced area 5 as well as the area 3 itself. The two implantation steps for forming the areas 3 and 5 would also adversely affect the area 8. If the two doping areas 3 and 5 do not have the desired profile, the resulting semiconductor device cannot have the desired behavior.

In sum, changing the order of processing steps taught by Kumar would produce a semiconductor device with unexpected results, which cannot satisfy the intended purpose as described in Kumar. This is why Kumar teaches that the implantation of the first gate area 3 (FIG. 19B) precedes the implantation of the field enhanced area 5 (FIG. 22B) and the formation of the third gate area 8 (FIG. 23A).

Because it is not obvious for one skilled in the art to alter the Kumar's processing order while still achieving the intended purpose as taught by Kumar, claims 21-25 are patentable over Kumar.

Claims 26 and 31

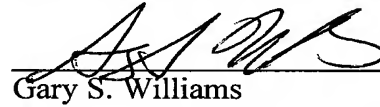
The Examiner used essentially the same argument described above in connection with claim 21. But as noted above, the modification of the processing sequence of Kumar would produce a device with unexpected and unsatisfactory results. Thus, claims 26-34 are also patentable over Kumar.

In light of the above amendments and remarks, the Applicant respectfully requests that the Examiner reconsider this application with a view towards allowance. The Examiner

is invited to call the undersigned attorney at (650) 843-4000, if a telephone call could help resolve any remaining items.

Respectfully submitted,

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